The Veterinary Record

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

No 33. AUGUST 17, 1940. Vol. 52.

THE OCCURRENCE OF TUBERCULOSIS IN THE STARLING
(*Sturnus v. vulgaris* L.)

S. L. HIGNETT, B.Sc., M.R.C.V.S.
and
D. A. McKENZIE, B.Sc.,
Department of Agriculture, University of Leeds.

An outbreak of avian tuberculosis among the stock of a well-managed poultry establishment was brought to our notice in the course of advisory duties.

The flock was established in 1929-30 from healthy birds, which were blood tested for bacillary white diarrhoea but not tuberculin tested. At first, as a routine measure, all birds which died were dispatched to the Ministry of Agriculture's Veterinary Laboratories. No cases of tuberculosis were reported in any specimens submitted, but in 1931 a tuberculous liver was found in a fowl which was being trussed at the farm. Thereafter, all ailing birds, in addition to dead birds, were sent for examination. From 1931 to 1939, however, no further cases of tuberculosis occurred.

In December, 1939, a positive result was reported in a Rhode Island Red hen from a laying pen. The birds in this pen were tuberculin tested in January of this year, and no reactors were found. It was decided, however, to destroy all the birds in the pen and examine *post-mortem*. Apart from the male bird, all the others showed generalised tuberculosis, although they had passed the tuberculin test a short time previously.

Thereafter the whole flock was tuberculin tested and infection was found in one other laying pen (two hens), in two fold units (three hens), and in a battery (one hen). A total of 15 infected birds was detected in the whole flock.

When the further cases were discovered in January, 1940, the question arose as to the source of infection. It is possible that tuberculosis had been present among the poultry on this farm for some time, but it should be pointed out that no tuberculosis had been noted for nine years, and only male birds had been brought in, none of which was ever found to be infected. It was thought desirable, therefore, to look elsewhere for an explanation of this large number of infected birds, spread through several widely separated groups. Consequently, attention was turned to the wild life in the neighbourhood as possible vehicles of infection.

Many investigators have examined this aspect of the question. A review of the literature, however, reveals a divergence of opinion as to whether wild birds and other forms of wild life are markedly susceptible to avian tuberculosis.

The attention of the early workers was confined to domesticated birds and birds in captivity in zoological gardens. Many cases of avian tuberculosis have been recorded among such subjects. Bland-Sutton and Gibbes (1884) found tuberculosis among the following species in Regent's Park Zoological Gardens : common fowl, peacock, guinea fowl, tragopan, grouse, pigeon, partridge and rhea. From the same source Sibley (1888) noted infection in the canary, corn-crake, finch, goose, guan, swan, owl and vulture, and later Shattock, Seligman, Dudgeon and Panton (1909) added to the list the cormorant, gannet, several Indian ducks and many foreign birds. These findings were confirmed by Koch, M. and Rabinowitsch (1907). Cobbett (1917) stated that the common fowl is the most frequent sufferer, but other birds in association with it may also be attacked. He mentioned turkeys, guinea-fowls, peacocks, and pheasants (hand-reared). The goose and duck, on the other hand, are, according to Cobbett, relatively immune.

As a result of their investigations, Bland-Sutton and Gibbes concluded that tuberculosis affected mainly grain-eating birds and that flesh-eaters, waterfowl and those feeding on fish were more resistant, although they recorded cases of infection in a falcon and eagle. Koch, M. and Rabinowitsch, on the other hand, placed the order of susceptibility as follows : the common fowl, birds of prey, marsh-fowl, domestic water-fowl, pigeons and sparrows.

These early investigators could find little evidence of tuberculosis among wild birds. Sibley reported no case of infection among pigeons shot in poultry yards. Similar results were obtained by Shattock and his co-workers. Wilson (1912), working for the Grouse Commission in Britain, examined 2,000 birds picked up dead on moors, and noted no tuberculosis, although Gross (1925) in a study of the diseases of the American ruffed grouse observed avian tuberculosis. Cobbett concluded from these findings that avian tuberculosis was rare among wild birds. This view was also held by Hutyra and Marek (1926) who stated that birds kept in captivity are more susceptible to tuberculosis and only in exceptional circumstances do outbreaks occur among birds living under natural conditions.

Many cases of infection have been noted among wild birds, however, and in certain American investigations a high incidence of infection was revealed.

Shattock, Seligman, Dudgeon and Panton have described a case in a lapwing in Scotland and Hammond-Smith (1908) in a kestrel. Pickens (1915) investigated an outbreak of tuberculosis among

pheasants in New York State. Cobbett has recorded the infection in a partridge and A. S. and F. Griffith in a private communication to Cobbett described a case in a sparrow which had been observed feeding on refuse in a yard where infected fowls had been kept. Crimi (1919) has given a detailed account of an extensive investigation into an unusual form of tuberculosis in the pigeon. Three cases of infection in the same species were recorded earlier by Jones (1914).

In a report from the North Dakota Agricultural Experiment Station, Schalk (1926) has set forth the results of experiments into several aspects of avian tuberculosis. Out of seven calves which were kept along with tuberculous poultry, six reacted to avian tuberculin. Similarly three calves out of four which were given fresh droppings from tuberculous chickens reacted to avian but not to bovine tuberculin. In a further experiment 93 pigeons were placed in a caged yard for four to five months along with tuberculous chickens and on *post-mortem* examination 13 showed tuberculous lesions. On the other hand, 35 sparrows kept under similar conditions yielded negative results. In another experiment 30 pigeons were maintained along with 19 reacting chickens for ten months. At the end of this period 21 remained alive and of these six were affected with tuberculosis. In a similar experiment with a further 30 pigeons and 21 reacting chickens, two pigeons died of generalised tuberculosis. Finally, Schalk gave the result of feeding and inoculation experiments on rats, barn mice and field mice. Feeding these rodents with tubercle-infected livers and spleens of chickens produced negative results and intraperitoneal and intracardial inoculations of such material into rats also proved negative. In a later bulletin from the same station Schalk, Roderick, Foust and Harshfield (1935) presented the collective results of these and other experiments. They concluded that only a nominal amount of tuberculosis occurs among sparrows and pigeons, but that these birds may act as mechanical carriers of infection. They also found that rats, mice and field mice possessed a high degree of resistance to avian tuberculosis. This finding is at variance with the earlier results of Weber and Bofinger (1904) and Koch, M. and Rabinowitsch who stated that mice, especially field mice, are markedly susceptible to avian tubercle bacilli. Koch, M. and Rabinowitsch recorded 18 positives out of 100 mice trapped in infected poultry yards and pheasant preserves.

Graham, Tunnicliff and McCulloch (1928) stated that avian tuberculosis may occur in wild birds and in pigeons. Mitchell and Duthie (1929) made *post-mortem* examinations of 40 crows and obtained six positives, *i.e.*, 15 per cent. infection. Kalter, Federighi and Inman (1933) referring to this report, stated that Mitchell in an examination of a further 600 crows recorded 8 per cent. infected with avian tuberculosis. These authors reported an apparent case of the disease in a sparrow-hawk. Beaudette and Hudson (1936) also observed tuberculosis in the crow, and earlier (1929) in the cowbird. Harshfield, Roderick and Hawn (1937) in a further report from the North Dakota Experimental Station included the results of *post-mortem* examinations on 246 crows in which eight showed gross tuberculous lesions, six of these being avian tuberculosis. Hare, T. (1932) has noted the infection in a blackbird which was known to frequent a poultry farm, and A. S. Griffith (1936) has recorded an instance of tuberculosis in the bat. Feldman (1938) in a recent publication has surveyed all aspects of avian tuberculosis including a review of the pathogenicity of avian tubercle bacilli for birds other than domestic poultry.

It is noteworthy that experimental feeding or inoculation of birds with either tubercle bacilli or infected material has produced uncertain results. Weber, Titze and Weidanz (1908) were unsuccessful in attempts to infect starlings with human, bovine or avian tubercle bacilli. A finch, however, contracted avian tuberculosis. Van Es and Schalk (1916) introduced mammalian tubercle bacilli into sparrows and chickens. The inoculated birds eventually died in an emaciated state but at autopsy no lesions were visible on the internal organs. They concluded, however, that birds may serve as intermediary transmitters of mammalian tuberculosis. Liverani (1934) has shown that all types of tubercle bacilli may be found in the eggs of spontaneously or artificially infected fowls.

. . . . .

In the present investigation an initial survey to determine the occurrence of tuberculosis among different species of wild life in the neighbourhood was carried out during January and February, 1940. In this period *post-mortem* examinations were made as follows :—

	Individuals.
Rook (*Corvus f. frugilegus* L.)	7
Jackdaw (*Corvus monedula spermologus* Vieill.)	1
Starling (*Sturnus v. vulgaris* L.)	24
House-sparrow (*Passer d. domesticus* L.)...	6
Blackbird (*Turdus m. merula* L.)	1
Gull (*Larus* sp.)	1
Wood-pigeon (*Columba p. palumbus* L.) ...	3
Brown Rat (*Rattus norvegicus* L.)	2

Starlings alone gave positive results in three cases, and since on general grounds this bird appeared to be a more likely carrier of infection than other species, it was studied more extensively. It was very common on the farm, feeding among the poultry, and there was a large starling roost five miles distant, in which 50,000 birds congregated each night.

Starling material which was being collected for a separate investigation was placed at our disposal for examination. Tuberculosis was confirmed in twelve cases out of 252 birds shot during January to March, 1940 (*i.e.*, 4·8 per cent.). It should be stated, however, that only those cases which showed obvious lesions were brought to our notice. Cases in which infection was light, and not evident from macroscopic examination of liver and spleen, may have been overlooked, and thus the percentage obtained is likely to be erroneously low. In addition, the alimentary canals of 468 starlings which had been collected for the above investigation between March and December, 1939, and preserved in alcohol, were examined. Six (1·3 per cent.) showed definite tuberculous lesions, but this proportion is certainly much lower than the examination of all the fresh material would have shown.

Over these two periods, therefore, 21 infected birds were found out of a total of 744 (2·8 per cent.).

The above results confirm the opinions expressed by Cobbett that the alimentary canal is a common site of infection and by Sibley who found that infection occurred mainly around the caeca and caecal openings.

As the investigation proceeded it was thought

desirable to ascertain whether the organisms might also be found in the excreta, since it has been proved by Mohler and Washburn (1908), by Weber and Bofinger and others, that the spread of avian tuberculosis is mainly through food infected from the droppings of diseased birds. Accordingly, the rectal contents of an infected bird were examined microscopically with apparent positive results, and this finding was confirmed by animal inoculation.

This result was followed up by an examination of excreta obtained from trees in the roost. Although it could not be definitely asserted that this material was of starling origin, it was assumed that this would almost certainly be the case, since little other bird life was observed about the roost and the starling population was very large. This faecal matter also showed evidence of acid-fast bacilli and, after treatment, the centrifuged deposit was inoculated intravenously into two pigeons. These birds were killed in five weeks and examined *post-mortem*. No typical tubercular appearances could be detected in the livers or spleens of either bird, although the spleen of one was enlarged. In both instances smears prepared from the spleens showed acid-fast rods.

DISCUSSION

From the above results it is evident that avian tuberculosis occurs among starlings. It is probable that the habit of these birds of congregating into large colonies in roosts causes the amount of infection among starlings to be greater than among other species. (It has been suggested by Cobbett that overcrowding is the main factor causing the higher incidence of tuberculosis among poultry).

While the figures obtained in this investigation apparently reveal a comparatively low percentage of infection, there are two points which must be mentioned. First, only obviously diseased livers, spleens or intestines were examined microscopically, and it is possible that many infected birds were missed. Second, the main part of this investigation covered the period January to March, 1940, when the climatic conditions were the most severe this country has experienced this century. It is known that mortality among starlings was unusually high at this time, and it may be presumed that more infected than healthy birds would die under these conditions. We believe, therefore, that the actual percentage of infection is probably higher than the figures which we have obtained. The possibility of the starling acting as the vehicle of infection in the spread of avian tuberculosis is thus apparent, and this view is strengthened by the positive results obtained from the rectal contents of an infected bird and possibly from the excreta from trees in the roost. These results raise a further question: Is the starling responsible for some of the hitherto inexplicable tuberculin reactions in dairy herds which have been free from tuberculosis for some considerable time, and are not in contact with poultry? All who are acquainted with the habits of the starling know how flocks of this species range over pastures when feeding. It is conceivable that herbage can be contaminated with infected excreta to an extent sufficient, when ingested by cattle, to interfere with the tuberculin test. (This view is supported by the results of Schalk and his co-workers already quoted. Feldman (1939) has also discussed the rôle of avian tubercle bacilli in the sensitization of cattle to tuberculin.)

We should like to point out that this is in no way presented as being a comprehensive study of the question. We are merely placing on record for the possible guidance of others the results of our observations made during the course of advisory work. In our opinion there is scope for a large amount of further study.

Summary

The occurrence of avian tuberculosis in starlings varied from 1·3 to 4·8 per cent. Tuberculosis organisms were also found in the rectal contents and probably in the excreta on trees in the roost. The importance of the starling as a vehicle of infection is emphasised.

Acknowledgment.—The authors desire to acknowledge their indebtedness to their colleague, Dr. R. Carrick, for the supply of a great deal of the material of this investigation, and also for many helpful suggestions.

References

Beaudette, F. R. and Hudson, C. B. (1929.) *J. Amer. vet. med. Ass.* **74**. 1064-1066.

——— and ———. (1936.) *Ibid.* **89**. 215-217.

Bland-Sutton and Gibbes. (1884.) *Trans. path. Soc. Lond.*

Cobbett, L. (1917.) The Causes of Tuberculosis. Cambridge Public Health Ser.

Crimi, P. (1919.) R. Inst. Incoragg. Napoli, Ann. Staz. Malattie Infett. Bestiame. **5**. No. 2. 129-222.

Feldman, W. H. (1938.) Avian Tuberculosis Infections. Baltimore: Williams & Wilkins Co.

———. (1939.) *J. Amer. vet. med. Ass.* **95**. 152-157.

Graham, R., Tunnicliff, E. A. and McCulloch, E. C. (1928.) Illinois. Sta. Rep. 141-145.

Griffith, A. S. (1936.) *J. Hyg.* (London). **36**. 156-168.

Gross, A. O. (1925.) *Science*. **62**. 55-57.

Hammond-Smith. (1908.) *The Field*, April 18th.

Hare, T. (1932.) *Proc. roy. Soc. Med. London*. **25**. 1500-1501.

Harshfield, G. S., Roderick, L. M. and Hawn, M. C. (1937.) *J. Amer. vet. med. Ass.* **91**. 323-329.

Hutyra and Marek. (1926.) Special Pathology and Therapeutics of the Diseases of Domestic Animals. 3rd Ed. Lond. Baillière, Tindall & Cox.

Jones, F. S. (1914.) *Amer. vet. Rev.* **44**. 497-500.

Kalter, L. B., Federighi, H. and Inman, O. L. (1933.) *Ohio J. Sci.* **33**. 451-452.

Koch, M. and Rabinowitsch. (1907.) *Virchows Arch., Beiheft zum Bande*. 190.

Liverani, E. (1934.) *C. R. Soc. Biol.* (Paris). **115**. 133-134.

Mitchell, C. A. and Duthie, R. C. (1929.) *Amer. vet. Rev.* **19**. 134-139.

Mohler and Washbourne. (1908.) 25th Rep. U.S. Bureau of Animal Industry.

Pickens, E. M. (1915.) *Cornell Vet.* **4**. 183-190.

Schalk, A. F. (1926.) *North Dakota Sta. Bull.* **194**. 90-95.

———, Roderick, L. M., Foust, H. L. and Harshfield, G. S. (1935.) *Ibid.* 279.

Shattock, Seligman, Dudgeon and Panton. (1909.) *Proc. roy. Soc. Med.* (Dec.).

Sibley. (1888.) *Trans. path. Soc. Lond.* 464.

Van Es, L. and Schalk, A. F. (1916.) *J. Inf. Dis.* **19**. 614-627.

Weber and Bofinger. (1904.) *Tuberk. Adb., Heft.* **1**.

———, Titze and Weidanz. (1908.) *Ibid., Heft.* **9**. 59.

Wilson, E. A. (1912.) The Grouse in Health and in Disease. Smith, Elder & Co., London.

LACTATION TETANY AND THE ANAEROBES

A. C. FRASER, PH.D., B.V.Sc., M.R.C.V.S.,
LAMBOURN, BERKS

After an informal discussion on lactation tetany and associated conditions inaugurated by Mr. G. P. Male at the April meeting of the Royal Counties Veterinary Medical Association held at Reading, there seemed to be a weight of opinion among the Fellows present that the hypomagnesaemia usually found was not the root cause of these diseases, though its importance was not questioned, but that the origin of the conditions was more probably associated with the bacterial content of the abomasum and of the small intestine, which are both usually found to be inflamed in these cases.

This opinion coincided so closely with certain clinical observations of lactation tetany noted in Lincolnshire in the spring months of 1931, 1932 and 1933, that one was encouraged to put them on record and to put forward certain views on the subject of this disease which are recognised as being entirely unorthodox.

There are undoubtedly different forms of the lactation tetany type of disease occurring under different conditions, but the form met with in Lincolnshire is very constant, being confined to cows in milk that have calved from three days to four months previously and have been out at grass for from ten days to two months. The cow appears uncomfortable and stops grazing. She twitches her ears, rolls her eyes and bellows; she then begins to gallop and staggers in her gallop, being tripped or checked by any obstruction until she falls over. Clonic convulsions then set in, spreading from the fore quarters to the hind quarters, and death may occur within a period varying from 20 minutes to a few hours—sometimes very suddenly and sometimes being preceded by a period of coma. Temperature is high throughout. This represents the course in the peracute cases. There were less violent cases and some chronic cases, there being extension of the time factor and variation in the severity of the signs of the disease, but the general course followed was in other respects similar to the peracute cases.

In cases that do not prove fatal the convulsions pass off—with, or in some cases without, treatment—in half an hour to a few hours and the cow gradually returns to a normal condition except that she cannot or will not rise. Appetite returns in some cases and the cow gets up after a lapse of time, up to two weeks. Commonly death occurs after the cow has lain for several days refusing food. The temperature is high during the convulsions, drops to subnormal after they have subsided and thereafter fluctuates considerably.

Frequently in the death spasms there is a regurgitation of grass and fluid from the nose. The animal breathes through this and creates quantities of froth so that the dead beast is sometimes found with her head half smothered in froth and with a mass of regurgitated food in front of her. When the carcase is lifted to be moved quantities of food pour from the nostrils.

At the *post-mortem* examination when the skin is stripped off there is seen to be a dark mark on its under surface corresponding to a lesion on the carcase. The area covered by this lesion is extremely variable but it is usually confined to the back, shoulders and neck. A fellmonger's description vividly indicates the extent of the lesion and serves to emphasise its consistent occurrence—"It smits them on the back, creeps over the shoulders, runs up the neck and they fall down dead." When cut into, this lesion is seen to penetrate the muscles to some depth, the colour being dark red to purplish, resembling the flesh of animals dead of blackleg, except that there is no emphysema.

On opening the body cavity one is struck by the absence of lesions. The organs of the abdominal and of the thoracic cavities are, externally, in perfect order. On opening the stomachs, in some cases, portions of the mucous membrane, varying in extent from small areas to large patches, may be found inflamed, especially in the abomasum, and in nearly all cases the mucous membrane of the small intestine is acutely inflamed over a great part of its extent. The large intestine is not affected. There may be small subserous haemorrhages on the spleen and petechial haemorrhages in the myocardium. The brain and spinal cord are apparently normal.

The fellmongers in the district have known this condition for anything up to 20 years as the cause of bringing them in a few carcases each spring and they speak of it, from the darkened muscles, as a kind of blackleg "without the crackling." *Cl. oedematiens*, *Cl. welchii* and *Vibrion septique* have been isolated from material taken from this muscle lesion within an hour of the animal's death. A laboratory report received from the Institute of Animal Pathology in May, 1931, states: "This is the third case from which we have isolated *Vibrion septique* and from its presence in large numbers in the muscles and the changes which it had there produced one can overrule the suggestion of its being merely a *post-mortem* invader." Following on this an attempt was made at prophylactic treatment by the use of a *Vibrion septique* vaccine but the experiment was not on a large enough scale nor sufficiently controlled for any conclusion to be drawn as to its value.

The cause of lactation tetany is a problem of major importance. The sum total of our knowledge is that the disease has suddenly appeared as a scourge of recent years, though the condition, or one similar to it, has been known in some districts for many years; that there is an imbalance of the mineral constituents of the blood and that some cases respond miraculously and some not at all to udder inflation and to intravenous or subcutaneous injections of mineral salts. The major *post-mortem* lesions are some gastritis and enteritis and haemorrhagic effusion into the subcutaneous areolar tissue and into the underlying muscles in the region of the back and neck.

The biochemistry of the disease is being carefully studied. The chemist may be able to prevent the appearance of the disease by feeding minerals or by dressing the land. There is, however, no proof that the unbalanced mineral content of the blood is a primary factor in the cause of lactation tetany. It is also unlikely that a mineral deficiency should suddenly arise in the pastures of the enormous area of the distribution of the disease. The mineral imbalance is quite probably due to an upsetting of the animal metabolism by some other factor or factors and a bacteriological approach might be of some assistance in detecting the cause of the disturbed metabolism.

The biochemical approach has largely been

encouraged by the resemblance of the disease to milk fever—in some cases a very close resemblance. Lactation tetany also has points in common with diseases associated with an organismal infection. The lesions in the muscles resemble blackleg so closely that one looks for other points of resemblance to this and related diseases. It is well known that blackleg frequently affects the best animals of a group. Braxy of sheep also has the reputation of picking out the best animals. The chief lesion in braxy is an inflammatory condition of the mucous membrane of the abomasum. A. W. Turner[1] in writing of sheep diseases in Australia attributes great losses to braxy-like diseases whose characteristics he lays down as—a predilection for the best conditioned animals; a high mortality with few or no premonitory symptoms; rapid decomposition after death; a definite seasonal incidence, and a relationship to the presence of anaerobes. The chief braxy-like disease met with in Australia is black disease, which Turner has shown to be due to a toxaemia produced by *Cl. oedematiens* following damage to the liver by flukes.

Lactation tetany, as met with in Lincolnshire, very easily falls into Turner's group of braxy-like diseases. It has a predilection for the best-conditioned animals as many a stricken farmer can testify and as is shown by the rows of fine carcases hanging in the knacker's yards in May and June. There is a high mortality with few or no premonitory symptoms. The majority of cases are found dead. Those that are observed to become affected have frequently been grazing a few minutes previously and are often dead within an hour. There is only a minority of cases that survive long enough to be treated. There is rapid decomposition of the carcase unless the animal is slaughtered and bled very soon after the onset of the disease. The seasonal incidence is definite, from the middle of April to the middle of June. There is a relationship to the presence of anaerobes which have been shown to be present under conditions that eliminate the possibility of their being *post-mortem* invaders only.

It has been shown that braxy organisms are enabled to produce their toxic effects when the animal's resistance to infection has been lowered by the consumption of frosted foods. In the Australian black disease the organisms find a favourable medium for development in liver tissue damaged by fluke larvae. Another disease of the braxy-like group, namely "struck" enteritis of Romney Marsh sheep, clinically closely resembling lactation tetany, has recently been shown by McEwen and Roberts[2] to be due to the effects of toxin of *B. paludis* produced in lesions in the alimentary tract.

In all these diseases the organisms are present in the gut or in the organs of the apparently healthy animal and another factor is required before clinical conditions are produced.

Treatment by vaccination with the associated anaerobic organism has been marked with great success in the case of blackleg, braxy and black disease. In black disease liver fluke control and in braxy the avoidance of frosted foods is advocated. It is naturally advisable to pay attention to associated factors when these are known, although, as in blackleg, vaccination alone may be successful.

The effect of mineral salts on toxaemias produced by anaerobic infection is illustrated in the therapeutic use of injections of magnesium sulphate solutions in cases of tetanus, when relaxation of the affected muscles is frequently noticeable within a few minutes.

It would certainly seem to be worth while investigating the source of the anaerobic organisms found in the muscular and subcutaneous lesions in cases of lactation tetany. By analogy the immediate source is probably the alimentary tract and it would seem reasonable to assume, if we also assume for the moment that the toxins of these organisms are directly or indirectly responsible for the symptoms of grass tetany, that they are present and are producing their toxins in the inflammatory lesions in the small intestines or abomasum.

It seems probable that *Vibrion septique* is present in the intestines of healthy cattle in the herds which have suffered from lactation tetany and that there are other factors which determine that only cows in milk in April, May or June shall contract the disease. The sole clue so far is that there is an unbalanced mineral content of the blood.

Investigators might bear in mind the possibility of a toxaemia as a factor in lactation tetany and it is suggested that the use of a vaccine might be worthy of consideration as a prophylactic measure.

References

[1]Turner, A. W. (1930.) Black Disease (Infectious Necrotic Hepatitis) of Sheep in Australia. *Bull. Coun. sci. industr. Res. Aust.* **46**.

[2]McEwen, A. D., and Roberts, R. S. (1931.) "Struck" Enteritis and Peritonitis of Sheep caused by a bacterial Toxin derived from the Alimentary Canal. *J. comp. Path.* **44**. 26-49.

NEW YORK STATE TRICHINOSIS COMMISSION PLANS

Recent issues of this journal have furnished evidence of the urgency of official recognition—such as should be exemplified by adequate action in the matter of meat inspection—of Trichinosis as a public health problem of major importance in this country. This disease, predominantly acquired from pork infested with trichinae parasites, is of grave concern to the United States Public Health Service, according to which one out of every six persons in the U.S.A. is infected. It is recognised that, since the disease may readily be mistaken for many other affections—the commonest are typhoid fever, heart disease, malaria and rheumatism—the diagnosis is frequently missed and that the best method of attack is at the source—infested pork.

We have received a copy of the *New York Daily* giving the following information (regarding measures adopted in New York State) which in view of the above considerations, is of particular interest. "Since 1930 when trichinosis was made a reportable disease in New York, 1,278 cases have been diagnosed, 37 persons have died. Last January the State legislature handed the job of getting to the source to Senator Thomas C. Desmond of Newburgh, made him Chairman of the first State Trichinosis Commission, gave him $5,000 to work with.

"To-day (June 19th) Senator Desmond announced what the Commission hopes to do: Find an inexpensive, practical, effective skin test to establish the presence of trichinae in swine; set up a system of State meat inspection similar to Federal government's in interstate commerce; determine whether a law should be passed forbidding the sale of hamburgers that contain other than beef.

"Because extreme heat and cold kills the parasite, the Commission will also urge the cooking of garbage fed to hogs and the freezing of pork found to be infected."

THE VETERINARY RECORD
August 17th, 1940.

FULL EMPLOYMENT OF THE PROFESSION IN THE INTERESTS OF THE NATION

FOR many weeks past our correspondence columns have borne witness to the anxiety with which members of the profession are considering, both from the personal aspect and from that of the whole body of members in its relation to the present needs of the nation, the question of the continued inclusion of the profession in the Schedule of Reserved Occupations. Some division of opinion is disclosed in this correspondence and we are publishing the following brief review in the hope of clarifying the situation as we appreciate it at the moment.

The Schedule of Reserved Occupations was originally prepared by Government for the purpose of ensuring that persons possessing any special skill likely to be utilisable for the prosecution of the war should not be accepted for military service except in a department in which their services could be most profitably employed.

The appropriate military service for which veterinary surgeons are fitted is the Royal Army Veterinary Corps, but owing to the mechanisation of the Army, the Director of this Service was unable to offer more than a few new commissions to young graduates before the demand was satisfied. As the war progressed, however, it became evident that the demand for skilled assistance from veterinary surgeons for the protection of livestock might become so great as to require the services of the whole profession. To meet this important civil need, therefore, veterinary surgeons who were over 25 years of age and veterinary students who had passed the third professional examination were included in the Schedule. This was not done for military reasons but to ensure that in the possible event of outbreaks of contagious disease, or other causes resulting in damage to livestock, there should be a sufficient number of veterinary surgeons to deal with the situation.

Soon after the outbreak of war, the Director of the Army Veterinary Service, in consultation with the Animal Health Division of the Ministry of Agriculture, called a conference including representatives of the Service, the Ministry of Agriculture, the Royal College of Veterinary Surgeons and the National Veterinary Medical Association to consider whether any alteration in the reservation of the profession was advisable. At the conference it transpired that while, on the one hand, there was no likelihood whatever of any increase in the cadre of the R.A.V.C., the possibility of damage to the livestock of the country was so great as to make it imperative to have in readiness as large a number of veterinary surgeons as possible. It was therefore decided to recommend to the Ministry of Labour to extend the reservation of veterinary surgeons to include even those members of the profession who had not yet reached 25 years of age.

As the Government was preparing for a war lasting three years, it would be necessary, in order to avoid interrupting the supply of new graduates, to extend the reservation of students to include those who had passed the second examination, and who thus had three further years of study before they could obtain their qualification. These recommendations were submitted to the Ministry of Labour and National Service and immediately accepted.

Veterinary surgeons were, therefore, placed in the category of men whose best service to the community in war was to remain at their work and to be ready, if the emergency should arise, to deal with whatever damage might be sustained by livestock as the result of contagious disease or injury through enemy action. Similarly, veterinary students who have passed the second examination are considered to be giving their best service by continuing assiduously with their studies, so as to qualify without undue delay.

As the war has progressed a certain amount of professional unemployment and underemployment have been occasioned and this has been accentuated by the movement of large numbers of the population from certain coastal areas. Some people have attributed this situation to the fact that the profession is reserved, but, strictly speaking, this is not so, because (as has been previously stated in our columns) members of the profession who have lost their employment owing to war conditions and recent graduates who have not yet become employed are at liberty to join His Majesty's Forces if they have been unemployed for two months. Reservation is the precaution taken by the Government to see that men of special skill shall not be conscripted for military service except where that skill can be utilised.

As our members will have seen from the report issued in last week's Supplement to the *Veterinary Record*, the Council of the Association at its meeting in Edinburgh were of the opinion that some modification of the existing conditions of reservation was desirable for several reasons, the chief being that if all its members were not fully employed at the present time, the veterinary profession was not pulling its weight in the national interest; it was therefore considered that, under these circumstances, some might contribute more to the common weal if they were actually serving in the Fighting Forces.

As is well known, the officers of the Association, in common with many other members, have felt that there is to-day ample work of national importance for every veterinary surgeon to perform in the preservation of the health of animals, the control of their diseases, and in the conservation of essential foodstuffs, if only these veterinary services were

properly organised. The Survey Committee has of late been assiduously engaged in an endeavour to evolve a scheme along these lines.

At a special meeting of the Council of the Royal College of Veterinary Surgeons held recently, the subject of reservation and veterinary employment and unemployment was considered at length. Members of Council were agreed that there was essential work for all to do that would necessitate the profession remaining totally reserved. The Council resolved to recommend "That Veterinary Surgeons should remain reserved but that any of them who wish to join the Armed Forces may appeal against reservation to a tribunal to be set up, and if the tribunal finds that the services of a veterinary surgeon are not vital to the needs of agriculture and food production and conservation, then he may be released for military service."

Unstinted praise was accorded to the officers of this Association and the Survey Committee for their endeavours to deal satisfactorily with the above problems. The Council expressed a desire to join the Association in its efforts, and by the formation of a joint committee—N.V.M.A. and R.C.V.S.—bring to bear upon the appropriate authorities the added influence of the Royal College of Veterinary Surgeons.

This suggestion of the R.C.V.S. is being considered this week by the Association and it is hoped that in our next issue we shall be in a position to deal editorially with the activities of the Survey Committee.

TEART DISEASE IN CATTLE

"A large area of pasture in central Somerset and smaller areas elsewhere have been known for more than a century to cause scouring in ruminants, especially cows in milk and young stock," states *Nature* in a recent issue, and continues: "Such land is known locally as 'teart.' During the past four years an intensive study of the problem has been made by W. S. Ferguson, A. H. Lewis and S. J. Watson, and their results are now published in Bulletin No. 1 of the Jealott's Hill Research Station (Imperial Chemical Industries, Ltd.), Bracknell, Berks. The cause of teartness is the presence in the herbage of molybdenum, which is highest in green leafy material, particularly clovers and Yorkshire fog, considerably less in hay and very low in dead or frosted herbage. The land, therefore, can only be grazed with safety during the winter, and 'improvement' of the pasture only aggravates the trouble owing to the increase in clover. Scouring, however, can be entirely cured and prevented by feeding or drenching the stock with copper sulphate. 2 gm. per cow per day or 1 gm. for young stock is sufficient. Experiments conducted in America show that copper sulphate fed continuously at the above rates for a long period is not likely to have any harmful effect on stock. Experiments are in progress to see if the addition of copper compounds to the soil would be equally effective. As teartness increases under neutral or alkaline conditions, basic slag and lime should not be used; but sulphate of ammonia and ammonium phosphate fertilisers can be applied with safety. Reduction of teartness is also obtained by ploughing out and reseeding, and many of the affected pastures are being converted into arable land at the present time. Shallow ploughing is suggested to avoid bringing up the more teart subsoil."

ABSTRACTS

[UPWARD LUXATION OF THE PATELLA IN THE HORSE. (Trans. title.) Goebel, F. (1939.) *Tierärztl. Rdsch.* No. 28. 537-542.]

A general account with case records of 17 horses treated at the Giessen veterinary school, 15 being affected with habitual and two with stationary luxation. Operative treatment was given to 12, in nine of which the trouble was bilateral. [The causes, symptoms, diagnosis and simple treatment of upward luxation of the patella are presumably too well known to veterinary practitioners to require describing here.]

The operative treatment consisted of severance of the medial straight patellar ligament close to its lower attachment, on the standing animal under local anaesthesia (subcutaneous and subfascial infiltration). A horizontal incision through skin and fascia is first made and through the wound a blunt-pointed bistoury is inserted from rear to front inside the ligament which is severed by a strong withdrawal stroke from inside outwards. It is necessary to make sure that the fascia of the thigh is also severed at the site of incision, otherwise it might assume the function of the ligament and so interfere with the success of the operation. Goebel stands behind the horse when operating. The skin wound is closed by interruptured sutures and treated with a non-irritant surface-protective paste. Healing is normally by first intention. Post-operative care includes rest and tying up short for a day or two. This method of treatment gives a certain cure and treated horses are of full working value.

There is one risk involved in the operation—the cutting open of the femoro-tibial joint capsule: this happened once to Goebel but he sutured it carefully and no trouble followed. [It would be advisable to note whether the joint capsule is distended before operation and to tap it beforehand if such is the case.]

J. E.

* * * * *

[TREATMENT OF MYOGLOBINURIA. (Trans. title.) Tillmanns. (1939.) *Z. Veterinärk.* **51**. 49-75.]

After an appreciative consideration of the literature along with practical experience the conclusion reached by the author is that the best treatment for myoglobinuria, in addition to the ordinary symptomatic treatment, is the intravenous injection of calcium in doses larger than those usually recommended. This method, it is claimed, is successful even with severely affected horses, if not applied too late. From 40 to 60 grammes of calcium chlorate with 16 to 24 grammes of magnesium chlorate are injected in one litre of sterile distilled water. If one such dose is not beneficial it should be repeated at daily intervals until improvement is seen.

W. M. H.

* * * * *

[KIDNEYS AND SEX HORMONES. Korenchevsky, V., and Ross, M. A. (1940.) *Brit. med. J.* April 20th. 645-649.]

The actions of the sex hormones are not confined to the reproductive and endocrine systems, a fact of importance in consideration of their pharmacology. Earlier work demonstrated the influence of these compounds on the weight of liver, kidneys and heart,

and the present study is a more detailed examination of the changes in the kidney.

Male and female hormones have been given to rats over periods up to almost four months. Hypertrophy of the kidneys is produced, especially by androsterone and esters of testosterone. Histological examination shows that there is increase of the size of the cells lining the tubules, and of the lumina of the tubules. Oestrogens (esters of oestradiol) do not constantly produce hypertrophy, and, in contrast to androgens, there was evidence of a toxic effect in degeneration of the tubules in the boundary zone. Dilatation of the tubules was accompanied by atrophy of the lining cells, with hyaline degeneration, ending in rupture of the tubules. The authors compare this picture with that of Bright's disease.

The following conclusions are drawn with regard to possible clinical application of the data. (1) Androsterone, with its weak sex effect and marked kidney-stimulating (nephrotrophic) effect, might be of use in diseases where there is faulty elimination by the kidneys. (2) Oestrogens, especially in large doses over long periods, are contraindicated in patients suffering from diseases of the kidneys.

J. B. B.

* * * * *

[SULPHUR METABOLISM. Kellermann, J. H. (1938.) *Onderstepoort J.* **10**, 221, and **11**, 107-121.]

No significant differences in fertility, reproduction, or lactation were observed between rats on a stock diet and those on this diet supplemented by 3 per cent. elementary sulphur, nor were there any differences in the average birth weights of the young from each group. The utilisation of food by the sulphur group was similar to that of the control. Lactating rats in both groups gained in weight during the first 9 days after parturition.

Groups of rats were fed diets of low and high protein, and of low and high fat, all of equal energy value, with and without the addition of 3 per cent. elementary sulphur. The gain in weight per unit protein consumed was significantly greater for the low protein diet than for high protein, males making better use of their food than females. Although the addition of the sulphur significantly lowered the animals' efficiency of food utilisation on both low and high fat rations, no constant pathological lesions of the liver and kidneys were found attributable to the sulphur-fed rats as compared with controls, irrespective of the fat and protein contents of the diet.

Other rats fed on base-forming rations (compounded by the addition of base-forming salts such as $CaCO_3$, $MnCO_3$, and Na_3PO_4) showed a significantly higher " efficiency quotient " (gain in weight in relation to dry matter consumption) than on acid-forming rations, although the efficiency index of both groups was lowered by the addition of 3 per cent. elementary sulphur. Again males showed superior " efficiency quotients " over females and no constant pathological lesions were found in the livers attributable to the sulphur feeding. Full statistical analysis showed that these results were independent of any interaction between diets or between sex and diets.

Further groups were fed on isodynamic diets low in vitamins A and D ; the B complex ; all vitamins ; minerals ; proteins ; minerals and proteins ; minerals, proteins and vitamins, with and without the addition of 3 per cent. elementary sulphur. Toxic effects were exerted by the sulphur only when the basic ration itself was unable to support normal growth as a result of one or more deficiencies and in these cases acted by reducing food consumption per animal although not per unit body weight. Once again no constant pathological changes could be found in the livers attributable to the sulphur feeding whereas those rats which died during the experiment (as opposed to the others which were killed after six weeks of experiment) showed haemorrhagic necrotic areas in the liver with some degree of interstitial hepatitis.

A. E.

* * * * *

[EFFECT OF SUBCUTANEOUS IMPLANTATION OF ADRENALIN TABLETS IN BLOOD-SUGAR AND MILK COMPOSITION IN LACTATING RUMINANTS. Bottomley, A. C., Folley, S. J., Walker, F. H. A., Scott Watson, H. M. (1939.) *J. Endcrinol.* **1**. 287-299.]

Four experiments were carried out on goats and one on a cow. In the goats arterial blood samples were taken from extercorized carotid loops and in the cow blood samples were taken from the internal iliac artery and mammary vein. Control blood samples were taken for a few days and then a tablet of adrenalin was implanted subcutaneously, the goats receiving a dose of 50 mg. and the cow 496 mg. Hyperglycaemia was maintained for up to 42 hours and blood lactic acid rose appreciably during the same period. The percentage of milk lactose also rose but in all but one of the experiments this increase was more than offset by the reduction in milk yield which was shown to be due to the operative procedures involved.

J. F.

* * * * *

[EFFECTS OF THE INTRAVENOUS INJECTION OF CERTAIN SALTS OF SODIUM, CALCIUM AND POTASSIUM ON INTESTINAL TONUS AND MOBILITY IN THE DOG. Jones, L. M., and Hewitt, E. A. (1940.) *J. Amer. vet. med. Ass.* **96**. 359.]

In studies of the ability of certain sodium, potassium and calcium salts to stimulate the muscular activity of the intestine of the dog two types of experimental procedure were used : (1) in which anaesthetised dogs were employed, in which blood pressure, respiratory and intestinal movements were studied by tambours and recording apparatus ; (2) on pre-operated dogs in which a loop of intestine had previously been brought to the surface of the body and enclosed in a metal cylinder containing a rubber balloon ; this was connected to a water manometer and attached to a recording apparatus.

Intravenous injection of Lang's solution (approximately 5 per cent. each of sodium chloride and sodium citrate) effectively stimulated both intestinal tonus and mobility although the solution was slightly toxic to the respiratory and circulatory systems of anaesthetised dogs. Solutions of sodium chloride stimulated the intestinal musculature, depending more on the absolute quantity of salt injected than upon the actual concentration employed, while the most persistent and characteristic response of the intestine to intravenously injected sodium citrate was an increase in tonus, accompanied by bradycardia and a slowing of respiration when large injections were made. The stimulation of the intestinal musculature appears to be due to the sodium ions since chloride and citrate ions (as the

acids) were without effect. Sodium bicarbonate stimulated intestinal tonus and mobility more effectively than any of the other solutions used although it had little effect on the respiratory and circulatory systems.

Calcium chloride was not so effective in intestinal stimulation but its effects were more persistent; there is, however, considerable danger of heart block following its intravenous injection. Calcium gluconate had a greater stimulative effect than the chloride but boric acid, used to increase the solubility of the gluconate, apparently had no effect on the intestine. The gluconate further had little effect on the respiratory and circulatory systems. The intestinal musculature was depressed by the injection of potassium bicarbonate and potassium chloride, the latter being exceedingly toxic to the heart. A. E.

REPORT

[**SOUTHERN RHODESIA:** Report, for the year 1939, of the Director of Veterinary Research.]

This report is chiefly an account of routine laboratory work. Little time was available for the small staff to undertake research. The staff consisted of the Director, a research officer, a technical clerk, laboratory assistant, stockman and a typist.

The work entailed diagnosis of 2,025 smears from stock-owners, field veterinary officers and others; serological tests for brucella infection in cattle (2,861 tests); bacillary white diarrhoea in poultry (2,049 tests) and a small number of tests for paratyphoid infection in calves and infectious abortion in mares; faecal examination for helminths and coccidiosis; skin scrapings for ecto-parasites, and a number of *post-mortem* examinations on animals submitted by farmers and others. Vaccines were prepared for redwater and anaplasmosis, horse sickness, blackquarter, blue tongue, fowl pox and fowl typhoid. Worm remedies and drugs for the treatment of trypanosomiasis were also prepared and issued for field use.

Poultry diseases now occupy a prominent position in the activities of the Department, the most important being fowl typhoid, bacillary white diarrhoea and fowl pox. Mortality in a batch of imported Indian partridges was suspected to be caused by psittacosis. Virus-like bodies were seen in lung smears but no further grounds for the tentative diagnosis are reported.

An unidentified species of Theileria was encountered during the year causing a rapidly fatal disease in dairy cattle. Koch's bodies were seen in spleen and gland smears but parasites in the red corpuscles were very scanty in contrast to the large number of *Th. parva* seen in East Coast fever. The clinical and *post-mortem* findings differed also from East Coast fever. The virulence of the organism and failure to transmit it by blood inoculation suggests it was not *Th. mutans*, while neither the organism nor the disease conformed to *Th. dispar* or *Th. annulata* infection.

Helminthiasis is responsible for large losses in cattle and sheep in the Colony. Systematic dosing of sheep with specific remedies has given good results but in the case of cattle drug treatment has not been so satisfactory; adequate food, however, helps considerably to counteract the effects of gastro-intestinal parasitism in cattle. W. K.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Aug. 19th.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1, 4 p.m.

* * * * *

National A.R.P. for Animals Committee

INSURANCE OF COMMERCIAL VEHICLES

Further to our note in the issue of the *Record* for July 13th (p. 516), on the subject of the insurance of cars loaned to the National A.R.P. for Animals Committee, we reproduce below letters from the Accident Offices Association in regard to the cover that can be extended to commercial vehicles placed at the disposal of that organisation.

Accident Offices Association,
60, Watling Street,
London, E.C.4.
July 31st, 1940.

The Chief Executive Officer,
National A.R.P. Animals Committee,
36, Gordon Square,
London, W.C.1.

Dear Sir,

I beg to inform you that my Association have now had an opportunity to consider the question of insurance of commercial motor vehicles placed at the disposal of your organisation and have agreed that where the vehicle is used by the insured or a member, director or employee of the insured, the policy will operate, subject to its restrictions as to driving, without additional premium.

In the case of private type cars insured under motor trade or hire car policies, policy restrictions with regard to the persons who may drive may be waived on 10 per cent. additional premium.

Yours faithfully,
(Signed) G. F. JOHNSON,
Chairman.

. . . . .

N.A.R.P.A.C.,
36, Gordon Square,
London, W.C.1.
August 1st, 1940.

G. F. Johnson, Esq.,
Accident Offices Association,
60, Watling Street,
E.C.4.

Dear Sir,

I am much obliged to you for your letter of July 31st and have noted its contents with appreciation.

As I understand that in some commercial motor vehicle policies the driving is not solely restricted to the insured or a member, director or employee of the insured, am I to take it that, in spite of the fact that the policy might allow other persons to drive, under the arrangement agreed by your Association *only* the insured is allowed to drive for our purposes, and that an additional premium must be paid in all other cases?

I think it well to ask for this clarification before making the contents of your letter known to the bodies and individuals owning the vehicles in question.

Yours faithfully,
(Signed) ROBT. J. STORDY,
Chief Executive Officer.

Accident Offices Association,
60, Watling Street,
London, E.C.4.

The Chief Executive Officer,
N.A.R.P.A.C.,
36, Gordon Square, W.C.1.

Dear Sir,

In reply to your letter of August 1st, the position is that use of the vehicle must be *use* by the insured or a member, director or employee of the insured. It must be *driven* by a person authorised by the policyholder to drive. Generally speaking, the policy recognises driving by any person with the permission of the policyholder, but in the case of certain classes of policy it is limited to the insured or his employees.

Yours faithfully,
(Signed) G. F. Johnson,
Chairman.

It must be observed that the undertakings given by the Accident Offices Association are subject to any restrictions on individual policies and every member of the organisation using or lending any motor vehicle (commercial or otherwise) for the purposes of the N.A.R.P.A.C. should apply to his Insurance Company for confirmation that such use is deemed to be use within the scope of the policy and to secure a letter in confirmation of this fact (without paying an additional premium) or endorsement of the policy where the extra premium of 10 per cent. is required.

* * * * *

GENERAL OBITUARY

Dr. John Menton

We learn with deep regret of the death of Dr. John Menton, pathologist and bacteriologist to the county of Staffordshire.

There must be few veterinarians in the Midlands who have not at one time or another availed themselves of the expert advice that it was within the power of John Menton to give, and which he gave so freely. By his passing the veterinary profession has lost one of its greatest admirers and most loyal friends.

Dr. Menton would have been a valuable asset in the application of this Association's programme for dealing with mastitis and contagious abortion, on both of which subjects he was an acknowledged authority. Always an ardent advocate of clean raw milk and its purchase on a quality basis, ten years ago, in association with the present President of the National Veterinary Medical Association, he read a paper entitled "Improvement in the Public Milk Supply—Is Pasteurisation Necessary?" before the Comparative Section of the Royal Society of Medicine.

A keen believer in routine milk examination, it was John Menton who recently isolated *Brucella melitensis* from milk in Staffordshire—the first occasion this organism had been found in milk in this country. His labour in this connection was, in fact, Dr. Menton's last work for the local authority which he served so well, and was responsible for the recent Brucellosis Melitensis Order, 1940, of the Ministry of Agriculture.

The issue of the *British Medical Journal* of August 3rd contains the following tribute: "The death of John Menton after a comparatively short illness came as a great shock to the medical profession in Staffordshire. To say that he will be missed is a truism—he cannot be replaced. His genial Irish humour endeared him to all with whom he came in contact. His official position was pathologist and bacteriologist to the county of Stafford, but there are many medical men who have reason to be grateful to him for his unofficial rôle as a disinterested counsellor and friend both in their work and in their private affairs. He came to Stafford after being demobilised, and soon took in hand the development of V.D. clinics in Stourbridge, Dudley and elsewhere. He transformed the county laboratory from a very small affair in Wolverhampton in 1920 to the vast unit in Stafford, one of the finest in the country. Menton was widely known for his work on the morphology of the *C. diphtheriae*, and his work on the serum tests for syphilis is recognised throughout the medical world. His more recent research into the diagnosis of undulant fever attracted attention in America, where he was asked to read a paper at the International Congress in New York last September. Always a patriot, he hurried back at the conclusion of the congress and offered his services. His position at Stafford, however, precluded him from being released. A few years ago he founded the Mid-Staffordshire Medical Society, and acted as honorary secretary until 1939. During this time the meetings of the society were very largely attended, and many eminent men from London and the Provinces were numbered on the lecture list. The sympathies of a large circle of medical and non-medical friends are extended to his widow."

. . . . .

We also desire to express our deep regret at the death of Colonel Sir William Wyley, V.D., D.L., J.P., Chairman and Managing Director of Wyleys Limited. To the Midlands, and particularly to Coventry, his town of residence and business, Sir William Wyley was a great public benefactor.

* * * * *

PERSONAL

Births.—Warnock.—On August 10th, 1940, at Wroxton, Chorleywood, Herts, to Kitty (*née* Sheather), wife of John Lyon Warnock—a daughter.

Gunning.—On August 2nd, 1940, at "The Limes," Acle, Norfolk, to Edith, wife of O. V. Gunning—a son.

. . . . .

Marriage.—Dransfield—Smallwood.—The marriage between James W. Dransfield, B.V.Sc., M.R.C.V.S., and Ethel Smallwood, B.V.Sc., M.R.C.V.S., took place on August 10th at the Methodist Church, Stratford-upon-Avon.

. . . . .

Will.—Mr. Arthur George Saunders, M.R.C.V.S., of Tone Lodge, Taunton, who died on April 18th last, aged 61 years, left gross estate of the value of £14,288 12s. 4d., with net personalty £11,802 1s. 11d.

* * * * *

AWARDS FOR AGRICULTURAL AND ANIMAL HEALTH RESEARCH

The following awards of two agricultural research scholarships and a studentship for research in animal health have been made by the Ministry of Agriculture and Fisheries and the Department of Agriculture for Scotland on the recommendation of the Agricultural Research Council: Ivor Isaac, B.Sc., of the University College of Swansea—a three-year research scholarship in plant pathology; J. S. Perry, B.Sc., of the University College of North Wales, Bangor—a three-year research scholarship in zoology; D. McFarlane, M.R.C.V.S., of Glasgow Veterinary College and Glasgow University—a studentship for research in animal health.

* * * * *

IN PARLIAMENT

The following are among the questions and answers recorded in the House of Commons recently:—

Livestock Breeding

Mr. Jackson asked the Minister of Agriculture whether he has any scientific adviser on the control of animal breeding; and, if so, was this adviser consulted in the publication of the Ministry's handbook on the British breeds of livestock?

Mr. Hudson: The competent agricultural research institutes are the source to which I look for scientific advice, as occasion arises, on questions relating to genetics. The publication to which the hon. Member refers was not intended to be a scientific treatise but was

designed to fill the need for a descriptive handbook on breeds of livestock and was prepared in close co-operation with each of the breed societies concerned.

* * * * *

"THE SURVEY SURVEYED"

Dealing editorially, in its issue of August 2nd, with the great national farm survey, the *Farmers' Weekly* observes:—

"Harvest finds us in the midst of the farm survey—probably the greatest land-mark of British agriculture this century. In ordering that survey, Mr. R. S. Hudson has perhaps done more for agriculture and for agricultural education in the last three months than was done in the last three decades. One important result of this 'visitation' by fellow farmers and technical agriculturists is that those of us who have 'stayed too close to home' have been stimulated to consider new ways and new methods of handling our land. Far too many of us have tacitly observed the view that because the home paddock was grass, it must always be grass. The survey, too, has awakened interest in new technical developments, and in the use of processes long since proved, but by no means universally practised. Above all, the gospel of the plough on the farm is claiming more and more converts. There are many ways of farming a given type of land, and at last we are realising that the various other ways are not the nonsense we have sometimes thought them. The committees visiting the farms are composed of practical farmers living in the area, and the staffs of county farm institutes and agricultural education departments. In the past it has been notorious that only a few, and generally the better farmers, have bothered to consult the agricultural organisers and their staffs. In this survey, the experts and the technicians, instead of waiting for invitations that seldom came, are going to the farms and talking practical farming on the ground itself. And they are proving, to the astonishment of some, that far from being experts who look at farming through microscopes and test tubes, they are, in fact, very knowledgeable and work-a-day practical men who can be very helpful. . . . In the past we have had annual, and bi-annual census of crops, production and stock. No doubt the information they provided has been valuable. But the data that the survey will give are of far greater value, and general opinion is undoubtedly that the census should be but a part of something far more important—a survey as a regular part of the farming calendar."

* * * * *

Fresh instructions have been issued by the Ministry of Food regarding responsibility for meat and offal at slaughterhouses and depots.

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

* * * * *

"RESERVATION" OF THE PROFESSION

To the Editor of the Veterinary Record

Sir,—A few years ago, I advocated in these columns the establishment of a State-controlled Veterinary Service, pointing out that the nucleus existed in the Veterinary Department of the Ministry of Agriculture. The veterinary profession in this country will never attain the status that is its right, or be able to eradicate those diseases which cause heavy annual financial losses amongst those animals of economic value to the nation, until it is State-controlled, giving employment to all, and with legislation to enforce its decisions.

In 1938, a State Veterinary Service was introduced, but it is a mere stepping stone to the edifice which is so urgently demanded. In this short period, much work has been done, principally in building up tubercle-free herds, but no marked decrease in the prevalence of the disease or eradication can be achieved until control can be exercised over those found to be affected. All matters pertaining to livestock (including public health work) must be in the hands of our profession: and each area must have its laboratory staffed by our men. We have the talent, but the tragedy is that those possessing it must either seek employment abroad, or disappear into the semi-obscurity of general practice.

To those who would assert that this is not the time to consider an extension of our activities it ought to be apparent that in times of war, next to the fighting services, the health of the nation and its livestock claims priority, and for this reason the professions responsible should be mobilised by the nation. Agriculture in 1920 was allowed to drop back into neglect and decay and despite the present interest shown in it, will, unless all are wide awake, be treated in the same way again after this war. The prosperity of agriculture and our own profession are linked inseparably. Healthy soil produces healthy crops, and stock.

Yours faithfully,
J. F. D. Tutt.

"Rothiemurchus,"
St. Cross,
Winchester.

* * * * *

THE PROBLEM OF COASTAL PRACTICES

To the Editor of the Veterinary Record

Sir,—Mr. Ll. E. W. Bevan in his letters to the *Veterinary Record* of July 13th and August 3rd, perhaps may have rather overstated the decay of veterinary practices in this country, but at the same time drew attention to an unsatisfactory state of affairs in the profession before the outbreak of war. The letters contain food for earnest thought. If small animal practice has been the mainstay of many country practitioners in recent years, what then will be their mainstay in the "lean" years that must inevitably follow the war?

As a result of recent developments and the preparations to defend the country against whatever may come, practitioners along most of the South and East coasts must have seen their practices swept away before their eyes. The small animal patient has almost completely disappeared from my practice, and even some dairy herds have been removed inland. I am startled nowadays by the appearance of a dog or cat at my surgery, whereas needless to say, in a "peace-time" August, I should be "run off my legs." In this connection it is relevant to remark that it seems somewhat unreasonable to expect practitioners, who are hard put to it to earn a bare living, to organise and execute the N.A.R.P.A.C. scheme for rural areas, without any remuneration. Unlike the scheme for urban areas, which was purely humanitarian, this is concerned mainly with the conservation of food that might otherwise be lost to the country, a matter of considerable economic importance, and consequently work for which adequate payment should be made. I am, of course, fully aware that it would be quite impossible for N.A.R.P.A.C. to make any such payments. It is a matter of interest that in certain evacuation areas, members of the medical profession, whose practices have similarly disappeared, are being paid £500 a year and an ample subsistence allowance.

Yours sincerely,
E. P. Barrett.

Eastdown House,
12, Clarendon Road,
Margate.
August 5th, 1940.

[Both the N.V.M.A. and the National A.R.P. for Animals Committee are giving the subject matter of this letter their earnest consideration, and it is hoped that a statement in connection therewith will be made in the near future.—*Editor.*]

SALVAGE OF FOOD ANIMAL CARCASES

To the Editor of the Veterinary Record

Sir,—With the extension of the National A.R.P. for Animals Committee organisation to rural areas, the onus of salvaging and slaughtering hopelessly injured food animals, pending the arrival of a veterinary surgeon, is to a certain extent falling on laymen as Parish Animal Stewards, assisted in some but not all cases by local butchers.

There also appears to be a tendency to arrange for the transport of such carcases to the official Government slaughterhouse as quickly as possible.

Although my experience concerning the handling of carcases is limited, two facts occur to me which might be of some importance. These are:—

1. The necessity for keeping a carcase stationary so that the process of coagulation which enables the carcase to set firm can occur without interference. It would, therefore, seem desirable to leave a carcase in the farm building or village slaughterhouse in which it has been dressed for at least 12 hours before removing it to the official slaughterhouse to which it has been designated. The only circumstances justifying exception to this rule would be very hot weather or unhygienic surroundings in a farm building.

2. When an animal is injured by a high explosive bomb, the effect of shock must be considerable. It is possible that such shock might considerably interfere with *rigor mortis* and hence hinder the setting of the carcase. It would therefore appear that if the injuries are not severe enough definitely to necessitate slaughter at once but are of such a nature as to prevent the animal being sent to a Government slaughterhouse, it would be best to leave the injured animal a few hours to enable it to overcome the effects of shock before slaughter.

Perhaps some veterinary surgeon with experience in meat inspection would offer his views on these remarks.

Yours faithfully,
H. C. Swann.

London Road,
King's Lynn.
August 10*th*, 1940.

* * * * *

COBALT AND PINE DISEASE

To the Editor of the Veterinary Record

Sir,—In a recent issue of the *Veterinary Record*[1] Stewart and Ponsford cast doubt on the accuracy of our work on pine disease in sheep, carried out on the Scottish side of the Border, in which we found that the administration of cobalt acted both as a cure and a preventive of this disease. They suggest that our experiments were inadequately controlled and give experimental data purporting to show that pine disease is not curable by cobalt. We have examined the findings set out in this paper, but find no evidence that these in any way affect the validity of our conclusions.

Regarding the alleged inadequate control of our experiments, it may be stated that the hill pasture chosen for our investigation with cobalt[2] was known from past experience to give rise within a short period to acute symptoms of pine disease in hoggs if these were put to graze upon it immediately after weaning. Experiments with hoggs on this land during the two preceding seasons had shown an incidence of pine disease which amounted to 80 per cent. within three months. In these preliminary experiments the control animals were confined on the ground without treatment from August to December and the disease ran its full course, many of the animals being *in extremis* at the conclusion. In the final experiment with cobalt the control animals were not carried to the point of collapse but were given treatment soon after symptoms of pine disease were fully apparent. There is no reason to believe that this procedure detracted from the value of the results.

The fact that the pining animals appeared to have increased in liveweight is due to the initial weighing having been done when the animals were in a healthy and thriving state. During the interval of seven weeks, at the end of which they were weighed again, they had developed the disease and had begun to decline, but the increase made in the early stages resulted on balance in a slight gain over the whole period.

Since this investigation was carried out, the use of cobalt for curative and preventive purposes in pine disease has been widely adopted in the south of Scotland, and in other areas, with highly successful results. On farms where treatment has been introduced on a systematic scale, pine disease has been abolished. This has been achieved without the use of anthelmintics. We have treated over 300 pining sheep by oral administration of cobalt on 22 different farms, and the recovery rate has amounted to 98 per cent. This cannot be explained as a coincidence as the same treatment has been repeated by stockowners on the farms concerned with similar results.

We suggest that the experiments carried out by Stewart and Ponsford in Northumberland may have been conducted under abnormal conditions and that this has given rise to complications. It is not possible to confine a fairly high concentration of sheep on a restricted area of pining land for a period of years as has been done in this case without incurring a degree of parasitic and bacterial infection which is not usually found in practice. Under these conditions it may well be that the use of cobalt alone is ineffective.

Yours faithfully,
H. H. Corner.
A. M. Smith.

Edinburgh & East of Scotland College of Agriculture,
13, George Square,
Edinburgh, 8.
July 15*th*, 1940.

[1] *Vet. Rec.* **52**. 379 (1940).
[2] *Biochem. J.* **32**. 1800 (1938).

* * * * *

ELECTRIC VIBRATOR OR COAXER

To the Editor of the Veterinary Record

Sir,—Undoubtedly numerous readers of the *Veterinary Record* are grateful to Mr. Gladstone Mayall and Mr. Edward Wilkinson for drawing their attention to the utility of electricity in stimulating animals to regain the use of their legs. This is far more effective than the old-fashioned custom of placing a dog in front of a cow, or hacking the tail in trying in vain to find the "concealed worm."

This apparatus was in use in the large slaughterhouses in foreign countries, but in recent years it has been found more convenient to connect a length of cable to the electric current of the plant, where it can be switched on or off. The other end is attached alongside a wooden pole of about four or five feet in length, and connected to a piece of metal at the end of this pole. When an obstinate animal blocks the gangway, all that is required is a slight touch of the end of this pole to the coccygeal region of the animal. The same applies to an obstinate animal which goes down on the floor in order to avoid being pushed forward to the killing pen.

A simple method for a veterinary practitioner who may not possess a small electric vibrator, is to carry a few yards of electric cable in his car, and to connect one end of it to the sparking plug and the other end to an implement such as a hay fork, which is always convenient on a farm. By running the engine slowly the necessary current can be generated.

Yours faithfully,
Edward Morgan.

"De Lejos,"
Crest Road,
Hayes, Kent.
August 12*th*, 1940.

Contents

PAGE

GENERAL ARTICLE:
The Stallion and Fertility: The Technique of Sperm Collection and Insemination F. T. DAY 597

CLINICAL COMMUNICATION:
Ulcerative Stomatitis of Camels ... E. F. PECK 602

ABSTRACTS:
The Tropical Grass *Melinis minutiflora* as a Preventive against Malaria and other Tropical Diseases (Morgan, E.) ... ... J. T. E. 603
Avian Tubercle Bacilli in the Tonsils of Swine (Feldman, W. H., and Karlson, A. G.) J. F. 603
Para-aminophenylsulphamide (1162F) in the Chemotherapy of *Str. equi* Infections (Descazeaux, J., Courtade, R., and Rocq) D. M. 604
Purulent Arthritis in a Foal due to *Salmonella typhi-murium* var *Copenhagen* (Storrs) (Henning and Clark) ... ... A. W. T. 604
The Senecio Alkaloids. I.—The Isolation of Isatidine from *Senecio retrorsus* and *Senecio isatideus* (De Waal, M. L.) ... ... A. E. 604

REPORT:
Uganda Protectorate: Report of the Veterinary Department for the Year 1939 (Simmons, R. J.) R. F. 604

PAGE

IN PARLIAMENT 605

NOTES AND NEWS:
Local Use of Vitamin A in Ophthalmic Conditions 602
Prevention of Waste of Food 606
Diary of Events 606
National A.R.P. for Animals Committee 606
Personal 606
R.C.V.S. Obituary 606
University of London Examinations in Veterinary Science 607
Horsed Units in the Army 607
Legal Notes 607
Sulphanilamide in War-time Surgery 607
Government's System of Livestock Priorities ... 608
£40,000 for Famous Racehorse 608
Dried Blood Plasma 608
Ministry of Agriculture News Service 608
Edible and Poisonous Fungi 609

CORRESPONDENCE:
Contagious Keratitis in Cattle ERNEST F. JARDINE 609
Salvage of Cattle Carcases ... EDWARD MORGAN 610

DISEASES OF ANIMALS ACTS: Summary of Returns 610

BISMA-CALNA CREAM

(VETERINARY)

The Combined Carbonates of BISMUTH, MAGNESIUM, CALCIUM and SODIUM

BISMA-CALNA CREAM will be found most effective in the treatment of Acute Gastritis. Ordinary cases of Indigestion are speedily relieved, and in the more serious digestive troubles gratifying results will be obtained by the continued employment of BISMA-CALNA CREAM.

DOSE (for dogs). In acute cases, half teaspoonful to one tablespoonful, according to size and breed, every two hours; later reduced to twice daily.

PRICE **1/6** per lb. Winchesters **1/4** per lb.

CHEVALIOD

A safe and reliable Ointment containing Iodine. Non-irritating and non-desquamating. Excellent for the treatment of Glandular Swellings and relief of pain.

5/6 per lb. 7 lbs. **5/-** per lb.

JOHN RICHARDSON & Co., Leicester, Ltd.

Manufacturing Chemists.

Established 1793. **LEICESTER.** Incorporated 1891

VETERINARY

Antiphlogistine

BRAND TRADE MARK DRESSING

IN

Infected Wounds

Even in contused wounds, a definite call is made on the leucocytes for their help of inhibition, and in the much more dangerous situation of badly incised or lacerated wounds, very strenuous duty is placed upon these scavengers of the blood—a duty which demands instantaneous response.

Veterinary Antiphlogistine Dressing helps Nature's reparative action and checks infection.

It accomplishes the former through greatly increasing leucocytosis, thus tending to wall out infection by increasing the serous exudate, and favouring the production of antibodies, upon which the healing of every wound actually depends.

Simultaneously, by endosmotic action, it is flushing the infected area with its non-irritant antiseptics.

Apply the Veterinary Antiphlogistine Dressing like a poultice, not like an ointment. Heat a sufficient quantity, place it in the centre of a gauze square, cover the affected part completely with the Veterinary Antiphlogistine Dressing, and bind snugly with a bandage.

MADE IN ENGLAND

Professional Prices on Request

THE DENVER CHEMICAL MFG. CO.

12, CARLISLE ROAD, LONDON, N.W.9

Telephone: **COLindale 6701** Telegrams: **"Antiphlo, Hyde, London"**